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ABSTRACT

The thesis presented is that the faculty, or more precisely the perspective it takes on academic programs and the actions based on those perceptions, is the critical factor for most collegiate institutions in the next decade. The prospect for the eighties will be substantially influenced by how well faculty are able to deal with curricular issues generated by the knowledge-information revolution underway. It is suggested that faculty will have to develop or refine capabilities not now fully appreciated, especially the techniques of curriculum analysis, organization for collective action, and the capacity to invent programs for learning that will fit into the patterns of technological growth. These ideas and approaches are outlined in detail, illustrated by charts and tables of curriculum data. (MSE)

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THE CURRICULUM: FACULTY PERSPECTIVES FOR THE EIGHTIES

(Looking at Other People's Programs)
Academic Leadership Workshop Series
Rochester Institute of Technology
April 2, 1980

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A. A View From the Threshold

1. Introduction: It is the thesis of this paper that the faculty, more particularly the perspective it takes on academic programs and the actions based on those perceptions, is the critical factor for most collegiate institutions in the next decade. That kind of flat assertion immediately raises a parcel of questions and, perhaps, even a few hackles so the line of reasoning must be developed promptly. That development requires; acknowledgement of the obvious conditions that surround us, a careful look at some overlooked viewpoints, an exploration of views and techniques to make the faculty more effective in exercising its collective responsibility for the curriculum.

2. The Obvious: First, a look at the obvious. On the threshold of the decade it is necessary to rehearse the loudest litany of our times on population and enrollment. There are hard facts we must live with and they form the basis for interpretation and then for creative construction. Neither the interpretation nor the creativity is often invested these days and we have trouble getting beyond the "three r's," reduction, reallocation, and retrenchment.

Recent summaries by John Centra (1978, 1979) of the Educatinal Testing Service and in the final report of the Carnegie Council, Three Thousand Futures (1980) give clear, reliable analyses of

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demography and enrollment prospects. In that too familiar data we note the peaking of the "college age population," 18-24 in 1981 then a 15 percent drop by 1990. By 1995 the population will be down 21 percent from the 1981 high. The entry age group 18-21 in both U.S. and Europe peaked a little earlier, 1979, so the first clear evidence of a tipover can be expected this fall. What share of that cohort of young people will enroll in postsecondary programs is somewhat less certain but not wildly variable. The "wobble" in enrollment projections is plus or minus 6.25 percent, 1.5 million around about 12 million enrollees. Comparing actual enrollments with projections in the late seventies shows evidence of slight underestimation, 1 to 1.5 percent.

What these studies have made much clearer is the wide range of variations encompassed by these general conditions. The variations are so many that most institutions will have to make their own interpretations of disaggregated data (Centra 1979) (Mortimer, Tierney 1979). Regions of the country differ markedly with the Northeast and Middle Atlantic states at the low end of enrollment estimates, Arizona, Colorado, Florida, Idaho, and Utah--not California--are areas on the increase. New York has made an independent enrollment study (Hollander 1977) and Pennsylvania is in the middle of one. Institutional characteristics have quite a bit to do with prospects for the years ahead. Generally, selective liberal arts colleges, universities, and public community colleges have a relative advantage. The other institutions constitute such a mixed group that it is difficult to accept them (Henderson 1977). In this sensitive zone the skill of the administration and the ingenuity of the faculty in each institution is under test. So long as the administration can navigate the institution to avoid

the fiscal shoals the rest depends on what faculty can do to make programs more effective.

3. The Overlooked: But after population projections and participation rates are known, after the hazards of budgeting are examined there is another set of factors, some quite well known that have a bearing on the future of colleges and universities. The most striking feature is that these factors all point upward, toward a "bullish" view of the academic future. To get at these we can begin by taking another look at enrollment. There are many places in postsecondary education where enrollments are not a simple function of population. Graduate enrollments at the masters level, for example, are contingent on the pool of eligible baccalaureate holders and that is very large. Enrollments in professional schools and high technology programs are a function of public policy, the changing state of the art, and the gate-keeping decisions of the profession. Short cycle continuing education is apparently a function of short range needs in industry and government mixed with large doses of promotion. It is presently a gold field for entrepreneurs but much of the activity could well be carried out by colleges and universities. Updating for occupations and the professions that require relicensure or recertification is a product of public interest and professional awareness, not population.

You may have spotted an underlying feature common to all these situations. The dynamic is not in education but in the nature of the society itself. Herbert Simon, the Nobel laureate, along with others sees us in the middle of a second industrial revolution. The first involved a transformation in the relationship between society and energy in many forms, steam, electricity, nuclear power. The second

revolution, now in progress, involves a transformation in the way a society deals with information; reads it, stores it, compares it, uses it, develops it.

In this second industrial revolution colleges and universities may be viewed as a system of information processing technologies. Undergraduate education, professional specialities, correspondence and continuing education, faculty research, each component is a technology built around a concept of information, a theoretical core often related to learning, and a collection of techniques for organizing, presenting, and evaluating an information transformation of some kind. From these individual technical combinations of learning theory, from ideas on human development, and from social values the educational enterprise generates utilities in the form of manpower, basic research outcomes, and special services. The picture gets more interesting if we view the role of colleges and universities to be one of responding imaginatively to technological change rather than simply to population growth, if we consider education as a technical system rather than a social system.

The theories which describe "technological growth" are rather different than those reflecting organic phenomena. The pattern is most often made up of a series of sigmoid curves joined into a longer sequence. Many of them, for example the graph of energy use, show little of the leveling effects found in natural events (Starr, Rudman 1973).

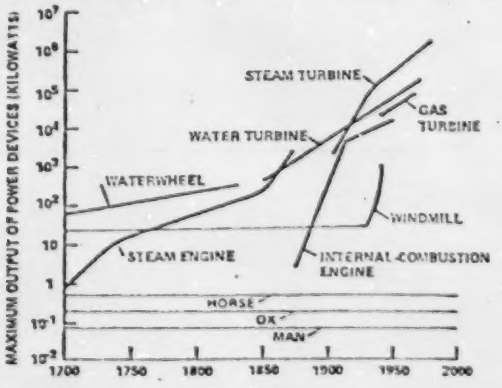

Figure 5 (left). Power output of basic machines has climbed more than four orders of magnitude since the start of the Industrial Revolution (about 1750). For the steam engine and its successor, the steam turbine, the total improvement has been more than six orders, from less than a kilowatt to more than a million. All are surpassed by the largest liquid-fuel rockets (not shown), which for brief periods can deliver more than 16 million kilowatts. [From (6); courtesy of *Scientific American*]

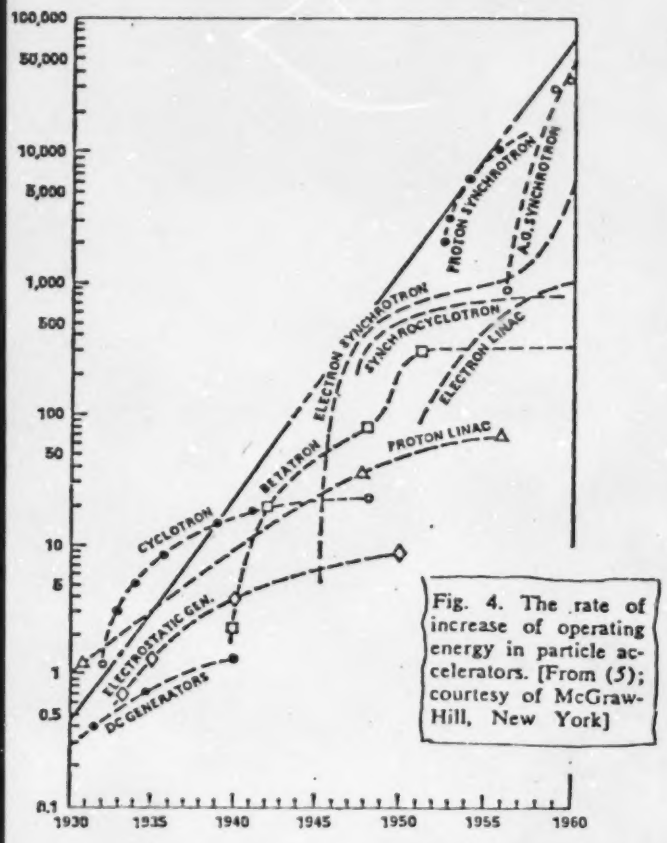

Fig. 4. The rate of increase of operating energy in particle accelerators. [From (5); courtesy of McGraw-Hill, New York]

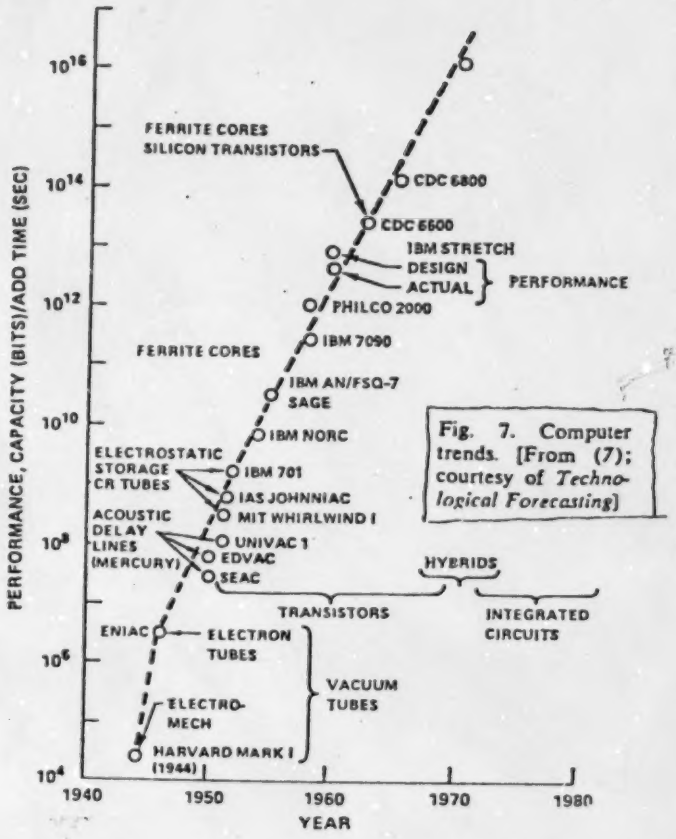

Fig. 7. Computer trends. [From (7); courtesy of *Technological Forecasting*]

If higher education is in fact a technical system for processing information then much more of our attention and energy should be going into questions of how knowledge is best dealt with rather than who is to be served. Since expert knowledge is the province of the faculty and is manifest primarily in curricular forms there program design becomes the major part of the educational endeavor. How the faculty interpret the information or knowledge needs of society into coherent programs of study and research constitute the heart of that endeavor.

Such analysis stands in contrast to the marketing approaches so much in vogue. These suggest that programs of study can and should be tailored to the potential client group the institution

wants to attract. This notion of "student needs" seems to me far too vague and transitory a base for curricular design. Obviously the state of student readiness and motivation cannot be neglected but neither of these views has much to contribute to an expert assessment of what a curriculum should be.

In summary, the case for considering issues of academic program design, curriculum, as the central emphasis of the eighties comes not from the market and population but from the more essential role of higher education as a major technical system for processing information. This view places a new and considerable responsibility on the principal locus of knowledge in an institution, the faculty.

To achieve effectiveness as designers of programs in the larger context described here faculty must achieve two conditions that are not now typical. A technical view of the curriculum must be developed, an objective view of the whole enterprise, as opposed to the subjective, proprietary view of courses and content that now obtains. Second, mechanisms must be found to bring the collective wisdom of a faculty to the point of intelligent decision on program offerings. The paragraphs that follow address these issues.

B. A Technical View of the Curriculum

1. Curriculum as a Technical Term: Turning to the semantic and technical difficulties that beset the word: The canny scots of Glasgow who first used the term in 1633 to describe the whole course of study at their institution did not follow through to invest the idea with its full meaning. It was not part of the vocabulary in either the English College or the German Institute so only the single word found its way to the United States. As a consequence there are a great many missing labels for phenomena that lie between the single course offering and a

total aggregated degree program. What terminology does one use, for example, to describe that constellation of essential support courses in mathematics, physics, and chemistry that form a network of interdependence for an engineering curriculum? How does one explain and/or reconcile multiple versions of a similar course like statistics, thermodynamics, or computer science? The point here is that the idea of curriculum is not elaborated into its most useful form.

2. A second and related problem with the word stems from the level of abstraction it represents. There is no one archetypical curriculum, no ideal form, no cas pur, but rather thousands of curriculums each unique to a faculty, a setting, and a point in time. This means that comparative studies have relatively little value and outright imitation no value at all. It means also that the internal logic and convenience of any curricular design is the best criterion for evaluation, the most useful avenue of analysis for the faculty of an institution.

3. The Nature of Faculty Specialization: Another factor frustrating full use of the concept of curriculum today lies with the faculty itself. By every step of training and by daily practice we are made into specialists who cultivate precision, detailed knowledge, and sophisticated levels of understanding in a particular discipline or field of study. This specialization is confirmed by an administrative structure and by research operations built around disciplinary departments. Then, almost as a matter of convenience and mechanical efficiency an educational program of majors and minors, concentration and distribution, is attached to the structure. Whether this is a good or even adequate way of designing a program for learning and teaching is in itself a serious question. The question will be raised sharply as more

of our graduates go into nonacademic fields. But the point to be made here is that all this specialization makes it very difficult for anyone, and particularly an individual faculty member to take a synoptic view of the curriculum, to see the total educational experience, whatever the committee assignment may be.

Yet, within the corporate structure that distinguishes the American university, the curriculum falls within the purview of the faculty as a body and almost nowhere else. Eliot in his innaugural speech at Harvard in 1869 summed up the conditions of faculty responsibility with comprehensive clarity;

> The governing bodies of the University are the Faculties, the Board of Overseers, and the Corporation. The University as a place of study and instruction is, at any moment, what the Faculties make it. The professors, lecturers, and tutors of the University are the living sources of learning and enthusiasm. They personally represent the possibilities of instruction. They are united in several distinct bodies, the academic and professional Faculties, each of which practically determines its own processes and rules. The discussion of methods of instruction is the principal business of these bodies. As a fact, progress comes mainly from the Faculties.

A formal confirmation of the dominant role for individual faculty in curricular matters is found in the 1915 AAUP "General Declaration of Principles." In a very real sense the curriculum is the most fundamental educational statement a faculty can make.

The paragraphs above lay out a perplexing operational dilemma. If faculty members are trained, rewarded, and encouraged in their respective specializations how is the broad perspective needed to discharge their responsibilities for the whole curriculum to be achieved? Conceivably an adjustment in the organizational structure could be made

by a decision to lodge curricular responsibility in some kind of a specialized office. For reasons that will be developed below that approach has been unsuccessful in universities and colleges. In academic institutions where there is a possibiiity of stress between two sectors of an organization another pattern of accommodation is usual. The organizational stress is often translated into role stress by placing individuals trained in one sector into positions of ambiguous responsibility in another. For example, to absorb the inherent stress between scholarly interests and the managerial requirements of an institution it is customary to appoint presidents with scholarly credentials. Placing a scholar of 17th century French literature in the executive role allows personal role stress to absorb organizational stress. The same solution obtains in the case of the curriculum. Able, specialized faculty are asked to set aside their primary role and assume a completely different viewpoint, an institutional perspective. Even with all its schizoid implications this solution brings large benefits by emphasizing the curriculum as a communal expression of scholars. But the tasks are tedious, the rewards few.

4. University and Common School. Still another constraint on the use of the curriculum idea in the university setting arises from the failure to distinguish clearly between the K through 12 common school setting and learning at the postsecondary level. It is important to keep in mind that these are not invidious distinctions of inferior-superior, or even higher-lower but simply differences with implications for understanding and operating the curriculum in two separate settings. The refusal of college and university faculties to acknowledge or accept the principles of curriculum construction developed by schoolmen has sound foundations but those objections need to be better understood by

both parties if proper attention is to be given to the undergraduate curriculum.

a. The K-12 school curriculum is framed around the ideas of educational psychology, notably the psychological theories of growth and development which link the biological transitions through infancy, childhood, puberty, adolescence and early adulthood into a scheme of cognitive and personal development. Whether the roots are Piagetian, Deweyian, Freudian, or Brunerian it is the psychology of "growing up" that dominates the school curriculum.

Postsecondary education, on the other hand is keyed to knowledge, to many-sided, tentative, impersonal knowledge organized around the structures of the academic disciplines. In the September 1978 edition of the American Scholar Edward Shils eloquently summarized "The Academic Ethos" and one set of paragraphs makes the argument with some force.

> In all these activities (citizen, teacher, member of a profession) the university teacher has a special position in consequence of his posession of superior knowledge. He may not be wiser than other citizens, but his knowledge is superior, in the sense that it is truer than what others who are not university teachers or members of research institutes possess in the same subject; it has been gained by systematic investigation and concentrated analysis; and he has more of it. All his obligations as a university teacher derive from, and are limited by, this possession of superior knowledge.
>
> A substantive body of knowledge in itself has no necessary implications for the conduct of its possessor. The knowledge of the consequences of urbanization does not entail any particular course of action with regard to the question of whether urbanization is good or evil. But the pursuit of knowledge about urbanization or any other phenomenon of nature or culture does entail respect for the rules of the pursuit of knowledge; it entails affirmation of the standard of truthfulness. This in turn has implications for the transmission of knowledge, whether it be to young students, to the wider public, or to the powerful in society. It also has implications for conduct in universities--the institutions in which knowledge is activated, that is, acquired and transmitted.

> The academic ethos is the sum of these obligations. It is in quite effective existence; it is not something excogitated outside the academic realm and offered as an alternative to what goes on there. It is already loosely respected by many academics; its articulation is intended to make them more aware of what they are already committed to. Despite this general observance, there have been many breaches in it. Repeating and underscoring it may lead academics to greater awareness of both the commitments and the breaches.

With respect to students, then, the primary concern of college and university faculties is with the relationship students establish with the world of knowledge.

b. The implications of this fundamental difference for operations are pervasive. In the K-12 school structure where the organizing principles can be drawn from single discipline it is quite possible for an individual especially trained in educational psychology to determine what should be in the curriculum and then construct the whole program. While it is no longer common for one person to make school curriculums it is quite usual for an expert panel to design something like "Man, A Couse of Study" (MACOS) to be adopted by many school systems. Teachers present the curriculum developed by specialists. Teachers, consequently, tend to be occupied in training and in practice with instructional techniques and issues. Whether the label is "teaching strategies" or "instructional systems" the subject is pedagogy.

In the college and university setting it is rare for a professor to teach from a syllabus developed by someone else. There are many areas of expert knowledge and no one has settled for contemporary times the Platonic query, "What knowledge is of most worth?" No single field can offer an exclusive set of organizing principles for the undergraduate curriculums. Without a single theoretical base there can

hardly be an authoritarian expert who has all the answers for constructing university programs of study. Where knowledge is differentiated, where it is seen to be tentative, where there is high value to the process by which we come to know, then the curriculum must, perforce, be the product of consensus among the responsible faculty.

c. There are other distinctions between the school structure and postsecondary education that separate the two views of the curriculum. Colleges and universities are corporate entities contributing to what Machlup has called a "knowledge industry." The greater part of that industry is devoted to organizing, verifying, and discovering new knowledge. Education is designed around the processing of that information.

In the school system responsibility for many areas beyond knowledge has been accepted; behavior, values, citizenship, health for example. The school's watchword is "service" fulfilled by preparing the young for adulthood and transmitting a body of organized, verified information and skill.

These basic distinctions and features lead toward a definition of what the collegiate curriculum is. A curriculum is an educational <u>design for student learning experiences</u> rooted in the <u>specialized knowledge of the faculty</u> and intended or expected to produce certain outcomes. You will note that such a definition falls between the idea, on the one hand, that a curriculum is the entirely unique and total experience each individual has during the college years or, on the other, the idea that it includes only the formal, structured experience under instruction. The operative term is the "intentional organization of learning experience." Two sets of intentions come to bear on the collegiate

curriculum. One view of what "ought to be" is held by the faculty, the other by students. No matter what the curricular form might be these two sets of intentions do not correspond exactly, a fact which generates a state of dynamic tension in most academic programs.

There has been a good deal written about the paradoxes that arise from this situation but it is only in recent years, since about 1960, that a more detailed analysis of curricular features has been undertaken (Dressel and DeLisle 1969) (Blackburn 1976) (Levine 1978) (Daedalus 1974; 1975). To translate some of this material into usable form it is possible to present three paradigms by which faculty members approach curriculum design. It is also possible to discern three major curricular patterns or prototypes in which students pre-figure their college experience. The two sets are not perfectly reconciled neither do the individual sectors often exist in pure form but the scheme does offer a way of coming to understand, evaluate, and place a program of study. No curriculum can do everything, therefore, the amount of consistency and congruity faculty can achieve between one of these paradigms and its course content and sequence is a rough indicator for curriculum effectiveness. Further, if there is a good match between student expectations and the faculty intentions then a high level of effectiveness is built into the design.

C. Patterns of Curricular Design: Paradigms and Prototypes

1. Faculty Paradigms for the Undergraduate Curriculum. The choice of the term "paradigms" to describe faculty approaches to the curriculum is deliberate. One alternative word might have been curricular "models" but, apart from the fact that the word is overused, it connotes a completed design rather than the intellectual orientation that

undergirds it. It was T. S. Kuhn who gave the concept of a paradigm its fullest meaning. It is adapted here from the "sociological sense of the term" developed in the Postscript to the second edition. A paradigm includes "an entire constellation of beliefs, values, techniques, and so on shared by members of a given community." He describes such academic communities:

> A scientific community (and a scholarly one as well) consists, in this view, of the practitioners of a scientific specialty. To an extent unparalleled in most other fields, they have undergone similar educations and professional initiations; in the process they have absorbed the same technical literature and drawn many of the same lessons from it. Usually the boundaries of that standard literature mark the limits of a scientific subject matter, and each community ordinarily has a subject matter of its own. There are schools in the sciences, communities, that is, which approach the same subject from incompatible viewpoints. But they are far rarer there than in other fields; they are always in competition; and their competition is usually quickly ended. As a result, the members of a scientific community see themselves and are seen by others as the men uniquely responsible for the pursuit of a set of shared goals, including the training of their successors. Within such groups communication is relatively full and professional judgment relatively unaminous. Because the attention of different scientific communities is, on the other hand, focused on different matters, professional communication across group lines is sometimes arduous, often results in misunderstanding, and may, if pursued, evoke significant and previously unsuspected disagreement (Kuhn 1970, 77).

From these paradigms faculty members carry over into the curriculum a rationale for study, notions of a psychology of how material is best learned, and pedagogical views about presentation of their speciality.

a. The Academic Approach (Paradigm I). The rationale or value set that supports this traditional approach is grounded in the sciences, and philosophies of idealism. Theoretical knowledge precedes and undergirds practical knowledge in all its forms. Abstract knowledge is the highest form of knowledge. Because good theory is enduring

it is therefore ultimately most useful. The world is best understood in terms of abstract knowledge as it is embodied in the disciplines.

The psychology of learning turns on the rational process of man; logic, the careful use of language, and a good grounding in mathematics. Because students learn basic knowledge and the methods of verifying it before they are introduced to issues or specific applications they gain a large general benefit, irrespective of the field in which they eventually practice.

The pedagogy is familiar. To begin with there is an emphasis on the formal, classical structure of all knowledge science as well as arts. Presentation technique or instructional method is not seen as important because the professor is in the role of an exemplar, an intellectual role model for his or her discipline. Most aspects of application are postponed.

Most pre-professional programs and disciplinary majors follow this pattern. There are those who maintain that whole fabric of what was once "liberal studies" has been cut up into academic pieces each with a curriculum of its own.

b. The Social Interaction Approach (Paradigm II). The rationale turns about the idea that the human and social consequences of knowledge in its applications hold special significance in the modern world. If the relationship of man to knowledge and technology is ignored, the potential harm is so enormous that direct attention to the human dimensions of knowledge is required. Those interested in helping others and serving the common good carry the responsibility for this study.

The psychology of learning in this case comes from the concept of symbolic interaction developed in the sub-speciality of social psychology. Involvement and interaction lead to a kind of gestalt into which scientific knowledge and techniques can be woven. There is an element of learning about one's self through reactions of others.

The pedagogy emphasizes situational involvement such as field work, practicums, observation, etc. Instruction tends away from didactic methods toward group experiences which are self-revealing, affective in tone, and individualized.

Typical fields which follow this approach are teaching, nursing, social work, recreation, and similar human service specializations.

c. The Applied Approach (Paradigm III). The rationale emphasizes that reality exists when knowledge is put to use. Since the world is organized around complex task centers for using knowledge those employment roles should provide the basis of the curriculum. Pragmatism is the dominant philosophy. Because contemporary technology is so intricate there is neither time nor need for a full theoretical background. The values of importance are utility, skill or competence, working combinations, "satisfiying" solutions.

The psychology of learning points to competency, often at various levels, as the objective. Stated as behavioral objectives these competencies become the common. visible, and thoroughly understood goals of both students and teachers.

The pedagogy concentrates on construction of real-life situations which are then segmented for learning purposes. Practice precedes and determines what theory is relevant. Laboratory work, simulations, and hands-on projects lead to internships, traneeships, or on-the-job training in the real situation.

The infusion of career education into any field usually prompts this curricular approach. Technical fields and para-professional preparations traditionally follow this pathway. Short cycle training programs and continuing education conform to the paradigm.

Evidence of these paradigms is visible in this table showing concentration patterns in selected fields.

Table 5. Percentage of bachelor's degree programs in eight different subject areas requiring varying amounts (in deciles) of the undergraduate curriculum to be spent on the major

	Subjects							
Percentage of time spent on major	(I) Humanities	(I) Social science	Science	(III) Business	(II) Education	(III) Engineering	(III) Health science	(III) Trade and technical arts
1-10								
11-20	5	9	2	1	2		1	
21-30	39	49	21	18	18	7	4	5
31-40	39	26	28	30	18	7	8	
41-50	12	12	29	22	23	6	17	5
51-60	2	2	14	20	25	12	19	23
61-70	2	2	5	9	12	24	25	23
71-80	1		1	1	3	24	24	27
81-90						20	2	18
91-100						1		

Source: Catalog Study, 1976. LEVINE 1978 p. 32

2. Student Prototypes of Expectation. Students approach the curricular experience with a set of expectations formed by many influences; previous schooling, the climate of society, opinions and beliefs of family and peers. When the curriculum presented by a faculty appears irrelevant to these expectations then a major educational trauma appears as it did in the sixties and to a lesser degree in the fifties. Even in ordinary times there is likely to be a gap between student expectations and faculty intentions. The Carnegie Commission survey in the early seventies revealed that 43 percent of the undergraduates

responding had changed majors at least once. Another criterion, then, for making judgments about the viability of a curriculum is the degree to which it incorporates one of these prototypes. Each prototype embodies a view of how one can achieve a sense of identity, a concept of self, in a way that establishes a connection with, and a place in, the real world.

a. Intellectual and Affective Liberation (Prototype A). The process here is one of self-determined exploration and experimentation in the enriched and risk-free environment of the university. Outreach and diversity of experience can free one from the limiting preconceptions of family, school, and social background, can cultivate creativity and intellectual integrity. There is a second aspect to the process involving criticism, analysis, and encouragement by faculty. The ultimate step is the integration of experience and the synthesis of knowledge to make the individual more capable of authentic expression.

Highly individualized and multi-dimensional, this liberating approach depends on associative rather than linear patterns of knowledge acquisition.

The expected outcome of this kind of educational experience is a creative intellect and independent personality marked by self-confidence and skepticism. It is most characteristic today among so-called nonconformist students and those working in fine arts.

b. Self-development and Orientation through Interaction (Prototype B). The process here is one of discovering the dimensions of self by working with others, most often in controlled situations of helping and service. A reflective learning takes place. By working with children, the handicapped, disadvantaged, ill, or needy it is

possible to perceive and define more clearly one's strengths and weaknesses. Such definitions provide guidelines and purposes for approaching formal knowledge. Knowledge is significant when it can be integrated with personality to improve confidence, competence, and skill.

Students in social work, nursing, special therapy fields, counseling, teaching, etc. usually expect and seek out interactions that will give a sense of direction to learning.

c. Socialization to a Role (Prototype C). The essential process is one of taking on an acceptable and certified professional or occupational role. "Becoming" something by conscious adoption of the values, behaviors, skills, and knowledge attached to and expected of persons in that role is a large factor in the American college. Theoretical knowledge is studied not for its intrinsic worth but as an instrument for developing competence in application. The collegiate experience is viewed as preparatory to real-life and tested for how well it replicates those future circumstances. Practitioners, not professors, are the exemplars and role models. Students characterized by these expectations tend to be found in; business, engineering, military sciences, medicine, and law.

D. Examining Curricular Proposals: Responsibilities, Criteria, and Techniques

1. Who is accountable for the curriculum and what responsibility do they hold? The paragraphs above pointed out the faculty holds two kinds of responsibility for a particular curriculum one individual, one collective. Faculty in a field or discipline, by virtue of their specialized training and expert knowledge, have primary

responsibility for program content; the topics covered, the sequence followed in presenting them, distribution of time, contingent requirements.

Those representing the university-at-large, the institutional interest, by virtue of appointment or election to a Senate Committee, College Task Force, or administrative position are responsible for insuring the educational quality and relevance to institutional policy of any curriculum proposal. The primary areas of attention are the context,--internal and external, professional and lay--and the form of the educational experience. Together content, context, and form make up the design of the curriculum.

In the sense that comparisons and judgements of relative worth are made from both viewpoints, the process is one of evaluation. But it is a formative or process evaluation rather than any final judgement of outcomes.

2. What criteria can guide the examination of and decisions about curriculum proposals?

a. Normative criteria:

1) Data based criteria. Recent studies of current practices in higher education give some indications of "normal" practices and the range of deviation. These are useful in providing a sense of limits but little more (Tables from Levine 1978). The use of faculty resources is an important function of every program. The ratio of courses offered per faculty member can help uncover efforts to "pad" a program or inflate catalog listings. For example a

university program that is offering six or seven courses per faculty member displays an exceptional load that requires further explanation (Table D).

Table D. Relationship between the average number of courses and faculty at different institutions by Carnegie type

	Research universities		*Doctorate-granting universities*		*Comprehensive universities & colleges*		*Liberal arts colleges*		*Two-year colleges*
	I	*II*	*I*	*II*	*I*	*II*	*I*	*II*	
Number of courses offered									
Undergraduates	2,385	2,285	1,835	1,767	1,226	874	579	501	463
Graduate	2,132	1,754	1,043	916	298	108	12	3	0
Total	4,517	4,039	2,878	2,683	1,524	982	591	504	463
Course/faculty ratio									
Undergraduate	1.5	2.3	2.7	2.8	4.1	3.7	7.6	7.8	3.3
Graduate	1.3	1.8	1.5	1.5	1.0	.4	.2	.1	0
Total	2.8	4.1	4.2	4.3	5.1	4.1	7.8	7.9	3.3

Source: Catalog Study, 1976.

Looking at another aspect of the same topic, the appropriate number of course offerings in a program, a committee would have to be on the alert if a new curriculum was built on only ten major courses (Table 9).

Number of courses offered	*Research universities*	*Doctorate-granting universities*	*Comprehensive colleges*	*Liberal arts colleges*
0	1.3	.8	2.0	2.7
1-5		.8	2.0	5
6-10	1.3	2.3	3.0	5.0
11-15	.8	1.6	7.9	18.3
16-20	2.9	4.3	7.9	16.9
21-30	5.4	9.8	22.8	29.7
31-40	10.4	14.1	16.8	15.1
41-50	11.7	12.9	14.9	7.3
51-60	12.9	11.7	6.2	1.8
61-70	9.6	8.6	4.2	.9
71-80	5.8	8.2	2.5	1.4
81-90	9.2	5.1	2.7	.5
91-100	5.8	4.3	1.0	
101-125	5.4	4.1	2.0	
126-150	4.6	3.9	2.0	
151-175	1.7	1.9	.5	
176-200	1.3	1.6	.5	
201-225	1.7	.8	.5	
226-250	.8	.8	.5	
More than 250	7.5	1.6	.2	

Source: Catalog Study, 1976.

Table 9. Number of courses offered in the major at percentages of different types of institutions, by Carnegie classification

In these times of "turf and territoriality" the number of courses or percentage of degree requirements allocated to the major field sometimes generates controversy. If a program proposal were based on an increase from 40 percent concentration in the major to 55 percent, the committee might well raise questions on the basis of usual practices (Table 7).

Table 7. Percentage of different types of colleges and universities requiring varying amounts (in deciles) of the undergraduate curriculum to be spent on the major

	Types of colleges and universities				
Percentage of degree program required for major	*Research universities*	*Doctorate-granting universities*	*Comprehensive colleges*	*Liberal arts colleges*	*Community colleges*
1–10					
11–20	2	5	7	7	5
21–30	28	44	36	37	23
31–40	29	27	33	35	23
41–50	23	16	18	17	22
51–60	8	6	5	4	14
61–70	7	29	2		7
71–80	3				6
81–90					
91–100					

Source: Catalog Study, 1976. LEVINE, 1978

Table A, again, incorporates a few other normative indicators that may help sift out deviant situations. Much data of this type can be generated, but the examples illustrate the limits normative information as well as its usefulness at the extremes.

Table A. Characteristics of faculty at different institutions by Carnegie type

	Research universities		*Doctorate-granting universities*		*Comprehensive universities & colleges*		*Liberal arts colleges*		*Two-year colleges*
	I	*II*	*I*	*II*	*I*	*II*	*I*	*II*	
Average number of FTE faculty	1,605	992	678	623	297	236	76	64	141
Median department size	21-25	16-20	16-20	11-15	11-15	11-15	6-7	4-5	6-7
Percentage of faculty with Ph.D.	66	63	64	57	48	45	57	38	10
Percentage of faculty more interested in teaching than research	46	56	61	68	82	86	82	91	94
Percentage of faculty without professional publications in last two years	18	23	28	36	52	58	53	69	82
Percentage of students believing "most faculty at my college are strongly interested in the academic problems of undergraduates"	38	44	52	44	53	57	81	70	65
Percentage of students satisfied with teaching at their college	65	64	71	65	68	69	85	76	76

Source: Catalog Study, 1976; and Carnegie Surveys, 1975-76.

2) Typical cases. In the earlier sections of this paper the idea of three common curricular paradigms was developed; academic, social interaction, and applied. They represent the alternative ways most faculty have tended to think about the curriculum, therefore new curriculum proposals should be expected to correspond rather closely with one of these forms. Attempts to incorporate too many approaches is a fatal flaw. Congruity with a paradigm is a criterion of probable effectiveness. Again, these normative forms help separate out exceptions but support few refined judgements.

b. Intrinsic criteria: Curriculums are unique in terms of faculty who design them, institutions that support them, and students who take them. The most useful criteria for examining the proposal are those which test internal logic and coherence. The propositions and questions below get at some of these intrinsic conditions.

1) The primary motive for change or initiation should be stated; the range of options briefly summarized.

2) The classical questions of Tyler (1950) offer a simple test of coherence:

   a) What educational purposes should be served?

   b) What educational experiences can be provided that are likely to attain these purposes?

   c) How can these educational experiences be effectively organized?

   d) How can we determine whether these purposes are being attained?

3) The curriculum is the ultimate educational statement a faculty can make. The extent of consensus among the faculty who will participate is an indication of program vitality.

4) Student expectations tend to fall into one of three prototypes: liberation, interaction, socialization. The degree to which a curriculum

responds to one of these prototypes is an indication of feasibility. Attempts to meet more than one with the same program are likely to fail.

5) Over time, a summary analysis of student transcripts will show whether students are, in fact, getting the course experiences the program intends.

6) How programs and curricular changes are introduced--the process of change--has large implications for costs, faculty load, and service courses. A plan should be presented as part of every proposal.

The prospect for the eighties in most good institutions will be substantially influenced by how well faculty are able to deal with curricular issues. These issues are generated by the knowledge-information revolution underway in our technocratic society. To meet the conditions effectively a faculty will have to develop or refine capabilities that are not now fully appreciated. A better technique for analyzing the curriculum is one of those capabilities. A more adequate organization for collective action on programs is another. It is this capacity to invent programs for learning that will fit into the pattern of technological growth.

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